

MODULE IV - TANK SYSTEMS

IV.A. APPLICABILITY

IV.A.1. The requirements of this Module pertain to the storage and treatment of hazardous waste in the Agent Collection System (ACS), Spent Decontamination System (SDS), and Brine Reduction Area (BRA) tank systems identified in Condition IV.B.1. The Permittee shall comply with R315-8-10 and the conditions of this Permit for all tank systems.

IV.B. WASTE IDENTIFICATION AND TANK USAGE

IV.B.1. The Permittee may only store at the listed maximum capacity, and treat by detoxification (T29) in accordance with Attachment 2 (Waste Analysis Plan), if applicable, the hazardous wastes listed for the following tank systems:

HAZARDOUS WASTE STORAGE AND TREATMENT TANK SYSTEMS				
Tank Number	Maximum Storage Capacity Gallons	Nominal Tank Dimensions ¹	Allowable Waste Codes	Permitted Management Activity ²
ACS-TANK-101	500 (agent) 582 (other permitted liquids, Note 2)	3'-6" diameter, 9'-9" high	F999, P999, D002, D003, D004, D006, D007, D008, D009, D010	Storage of agent, miscellaneous agent contaminated liquids, decontamination solutions for maintenance or agent change-over, and non-hazardous agent simulants
ACS-TANK-102	1,130	4'-6" diameter, 11'-9" high	F999, P999, D002, D003, D004, D006, D007, D008, D009, D010	Storage of agent, miscellaneous agent contaminated liquids, decontamination solutions for maintenance or agent change-over, and non-hazardous agent simulants
SDS-TANK-101 SDS-TANK-102 SDS-TANK-103	2,200 per tank	6'-0" diameter 11'-6" high	F999, P999, D002, D003, D004, D006, D007, D008, D009, D010	Storage and treatment of spent decontamination solutions, miscellaneous agent contaminated liquids from a spill, and liquid wastes from the remote sampling system glovebox and the CSS.

HAZARDOUS WASTE STORAGE AND TREATMENT TANK SYSTEMS				
Tank Number	Maximum Storage Capacity Gallons	Nominal Tank Dimensions ¹	Allowable Waste Codes	Permitted Management Activity ²
BRA-TANK-101 BRA-TANK-102 BRA-TANK-201 BRA-TANK-202	42,900 per tank	20'-0" diameter 20'-0" high	F999, D002, D004 through D011	Storage and treatment spent scrubber brines and BRA/BRA Pollution Abatement System (PAS) liquids
NOTES: 1. See Attachment 16 for design information for the ACS, SDS and BRA tank systems. 2. Miscellaneous agent contaminated liquids are defined in Attachment 2 (Waste Analysis Plan), Section 2.2.1.15.				

- IV.B.2. The sumps listed in Table 4, used to collect decontamination solutions, agent and miscellaneous liquid spills are subject to the requirements of this Module. These sumps, also called Intermittent Collection Units (ICUs) by the Permittee, may be used to treat agent and agent contaminated hazardous wastes with decontamination solution before they are pumped to the permitted SDS tank system. Only wastes with the codes F999, D002, D003, D004, D006, D007, D008, D009, D010, and P999 are allowed in the SDS sumps. The maximum capacity of the SDS sumps as shown in Table 4 shall not be exceeded, except as allowed by Condition IV.B.5 or Attachment 16 (Tank Systems). Wastes shall not remain in these sumps for more than 24 hours, except as allowed by Conditions IV.B.6. and IV.B.7.
- IV.B.3. Off-site generated hazardous wastes shall not be placed in any of the permitted tanks or sumps.
- IV.B.4. Laboratory wastes shall not be placed in any of the permitted tanks and sumps except for brine samples and their salt residues as allowed by Condition IX.B.3. Liquid wastes from the Conditioning and Settling System (CSS) may be placed in the SDS tanks. Agent samples managed in the remote sampling system glovebox shall be decontaminated before transfer to the CSS.
- IV.B.5. Notwithstanding the requirements specified elsewhere in this Permit, the Permittee may exceed the capacity of the sumps identified in Table 4 that are not listed in this Condition if, during a toxic area entry, the sump pump ceases to work and the subsequent decontamination of entrants causes the sump capacity to be exceeded and the decontamination is necessary to ensure a safe exit from the room or in the event of a failure of any of the SDS or ACS tanks. If this occurs, the Permittee shall record in the Operating Record the circumstances that caused the overfill and shall remove the waste as soon as it can be safely accomplished in accordance with Condition IV.B.2. This exclusion does not apply to the following sumps: SDS-PUMP-101, 102, 103, 104, 130, 131, 133, 136, 137, 138, 139, 140, 141, 142, 144, 156, 167, 173, 192, 193, BRA-PUMP-104, 204, 103.

- IV.B.6. Notwithstanding the requirements specified elsewhere in this Permit, the Permittee may store waste in the sumps listed in Table 4 for greater than 24 hours if a toxic area entry necessary to support waste removal cannot be initiated or completed for any of the following reasons:
- IV.B.6.a. Agent concentrations exceed the authorized level for the PPE to be worn.
 - IV.B.6.b. A breach or tear occurs in a DPE suit.
 - IV.B.6.c. A loss of communications occurs between the parties involved in an entry.
 - IV.B.6.d. The room temperature is too high to allow an entry.
 - IV.B.6.e. Any of the participants in an entry suffer from an illness or heat stress.
 - IV.B.6.f. A loss of Life Support System (LSS) air occurs.
 - IV.B.6.g. A loss of either utility power or the Heating, Ventilation, and Air Conditioning (HVAC) system occurs.
 - IV.B.6.h. Explosive components are present, endanger worker safety, and cannot be removed so as to allow removal of waste from the sump within 24 hours.
- IV.B.7. For those instances where waste is not removed from the sumps within 24 hours as allowed by Condition IV.B.6., the Permittee shall record in the Operating Record the circumstances that prevented removal within 24 hours and shall remove the waste as soon as it can be safely accomplished.

IV.C. GENERAL OPERATING REQUIREMENTS

- IV.C.1. The Permittee shall not place incompatible waste or material in a tank system if the waste or material could cause the tank, its ancillary equipment, or the secondary containment sump to rupture, leak, corrode, or otherwise fail.
- IV.C.2. The Permittee shall not place hazardous wastes in a tank or its ancillary equipment that has previously held an incompatible material until the tank or ancillary equipment has been properly decontaminated. The Permittee shall not place a different chemical agent in the ACS tanks until all sludge is removed and the tank has been properly decontaminated. The Permittee shall not place a different agent in the sump systems until the campaign changeover requirements for sumps specified in Attachment 5 (Inspection Plan) have been satisfied.
- IV.C.3. Any permitted tank system used to store or treat a hazardous waste at the TOCDF shall be managed in accordance with Module X.
- IV.C.4. The design and operating descriptions of the permitted tank systems are provided in Attachment 16 (Tank Systems). Operation of the permitted tank and sump systems shall comply with Attachment 16 (Tank Systems).
- IV.C.5. Waste shall not be added to any of the tanks described in Condition IV.B.1. unless the associated tank's level control instrumentation identified in Attachment 6 (Calibration Plan) is operational in accordance with the manufacturers' specifications and the level devices are fully calibrated.
- IV.C.6. If treatment is conducted in a tank system, sufficient freeboard shall remain so the permitted tank capacity shall not be exceeded when decontamination solutions are added.

- IV.C.7. Any permitted tank used to store or treat a hazardous waste at the TOCDF shall be equipped with a level control device that prevents the tank system from exceeding the permitted capacity.
- IV.C.8. The Permittee may transfer liquids accumulated in PAS-SUMP-110 to the Brine Surge Tanks (BSTs) provided that prior to transfer, the Permittee has analyzed the liquids in accordance with Attachment 2 (Waste Analysis Plan).

IV.D. SPECIFIC OPERATING CONDITIONS - AGENT STORAGE TANKS

- IV.D.1. The only hazardous wastes or other materials allowed in ACS-TANK-101 and ACS-TANK-102 are liquid hazardous waste chemical agents, miscellaneous agent contaminated liquid wastes, non-hazardous chemical agent simulants, and decontamination solutions used to decontaminate the system after agent campaigns and prior to maintenance activities that will be treated in the Liquid Incinerator (LIC) primary combustion chambers.
- IV.D.2. The only chemical agents that can be placed in the ACS, ACS-TANK-101, and ACS-TANK-102 are GB, VX and Mustard (H/ HD/HT) and their naturally occurring break-down products.
- IV.D.3. The miscellaneous agent contaminated wastes allowed in the ACS, ACS-TANK-101, and ACS-TANK-102 are identified in Attachment 2 (Waste Analysis Plan), Section 2.2.1.15.
- IV.D.4. The maximum storage capacity of the Agent Holding Tank, ACS-TANK-101, shall be 582 gallons, except for agent. No more than 500 gallons of agent shall be stored in this tank. The maximum tank level, measured from the tangent of the bottom dome, shall not exceed seven feet six inches for non-agent wastes and six feet three inches for agent.
- IV.D.5. The maximum storage capacity of Agent Holding Tank, ACS-TANK-102, shall be 1,130 gallons. The maximum tank level, measured from the tangent of the bottom dome, shall not exceed eight feet nine inches.

IV.E. SPECIFIC OPERATING CONDITIONS - SPENT DECONTAMINATION STORAGE TANKS

- IV.E.1. The only hazardous waste or materials that shall be placed in SDS-TANK-101, SDS-TANK-102, and SDS-TANK-103 are sodium hypochlorite decontamination solutions, sodium hydroxide solutions, the miscellaneous liquid wastes identified in Attachment 2 (Waste Analysis Plan) Section 2.2.1.15, spent bleach from PPE/personnel decontamination in the Munitions Demilitarization Building (MDB) using bleach bottles, liquid wastes from the remote sampling system glovebox and the CSS, major spills in accordance with Condition IV.E.4, run-off from fire suppression efforts as described in Attachment 9 (Contingency Plan), and cleaning solutions used to decontaminate the system after agent campaigns and prior to maintenance activities.
- IV.E.2. The maximum storage capacity of SDS-TANK-101, SDS-TANK-102, and SDS-TANK-103 shall not exceed 2,200 gallons in each tank. The maximum tank level, measured from the tangent of the bottom dome, shall not exceed nine feet five inches.

- IV.E.3. The only treatment allowed in the SDS Tanks shall be the addition of approved decontamination solutions when the chemical agents GB and VX are detected at or above 20 parts per billion (ppb), and the mustard compounds H/HD/HT are detected at or above 200 ppb.
- IV.E.4. The Permittee shall maintain a minimum of one SDS Tank (SDS-TANK-101, SDS-TANK-102, or SDS-TANK-103) free of waste when chemical agent (P999) is being processed or stored inside the MDB to be used in the event of a spill as a result of a tank failure, munition over-pack failure, or munition/bulk item failure.
- IV.E.5. The Permittee may accumulate waste, identified in Condition IV.B.1., in all three SDS Tanks when no chemical munitions and bulk items are inside the MDB and no chemical agents are stored in ACS-TANK-101 and ACS-TANK-102, such as during agent campaign changeovers or extended plant shutdowns.
- IV.E.6. In the event of a spill described in IV.E.4., munitions that have passed the Explosive Containment Vestibule (ECV) may continue to be processed. The Permittee shall not process any other munitions until the circumstances which resulted in the spill have been rectified, the spill has been cleaned up, and a minimum of one SDS tank is free of waste, as specified in Condition IV.E.4.
- IV.E.7. The Permittee shall manage waste accumulated in each SDS tank as an operating batch. A batch of waste shall be the volume of liquid accumulated in the tank when filling of the tank has been stopped and the Permittee has determined that no additional waste will be added to the tank before it is to be emptied. Prior to emptying the tank, the Permittee shall sample and analyze each batch of waste in accordance with the Attachment 2 (Waste Analysis Plan) and Module X.
- IV.E.8. Each batch of liquid waste accumulated in the SDS tanks that is derived from the decontamination of VX and mustard chemical agents shall be incinerated in the secondary chambers of the TOCDF LICs. Each batch of liquid waste accumulated in the SDS tanks that is derived from the decontamination of GB chemical agent shall be incinerated in the secondary chambers of the LICs or shipped off site for incineration. Only liquid wastes having an agent concentration at or below 20 ppb for GB, 20 ppb for VX, and 200 ppb for H/HT/HD shall be incinerated in the secondary chamber of the LICs. If the GB spent decontamination liquid is shipped off site, the requirements of Section 2.2.2.28 and Attachment 2 (Waste Analysis Plan) shall be met.

IV.F. SPECIFIC OPERATING CONDITIONS - BRINE SURGE TANKS (BSTs)

- IV.F.1. The only hazardous wastes that shall be placed in BSTs, BRA-TANK-101, BRA-TANK-102, BRA-TANK-201, and BRA-TANK-202, are spent scrubber brines from the incinerator Pollution Abatement Systems (PASs), liquid wastes from Sump 110, decontamination solutions, liquids collected in the BST secondary containment system, BRA PAS stack condensate, solutions used to clean the BRA heat exchanger, decontamination or cleaning solutions used to decontaminate the system after agent campaigns and prior to maintenance activities, and all allowable waste feed to the BRA Miscellaneous Treatment Unit specified in Condition IX.B.

- IV.F.2. The cleaning solutions for the heat exchanger referenced in Condition IV.F.1. shall be limited to 900 gallons per batch of weak acids (e.g., a nominal 3% by weight hydrochloric acid solution or a citric acid solution, etc). These solutions shall only be added to a BST when there is a minimum of 10,000 gallons of brine in the tank. Proprietary cleaning solutions drained from a Mobile Cleaning Unit shall not be added to any of the BSTs.
- IV.F.3. No ignitable or reactive waste may be stored in the BSTs.
- IV.F.4. The maximum storage capacity of the BSTs, BRA-TANK-101, BRA-TANK-102, BRA-TANK-201 and BRA-TANK-202, shall be 42,900 gallons per tank. The maximum level of liquid in the tank, measured from the bottom of the tank, shall not exceed 18 feet three inches.
- IV.F.5. The only treatment allowed in the BSTs shall be the addition of approved decontamination solutions when the chemical agents GB and VX are detected in the brine above 20 ppb, and the mustard compounds H/HD/HT are detected in the brine above 200 ppb.
- IV.F.6. Contaminated liquids shall not be pumped from the BSTs until concentration levels are at or below 20 ppb for agents GB and VX, and 200 ppb for mustard compounds H/HD/HT.
- IV.F.7. The Permittee shall manage waste accumulated in the BSTs in batches. A batch of waste shall be the volume of liquid accumulated in the tank when filling of the tank has been stopped and the Permittee has determined that no additional waste will be added to the tank before it is to be emptied. At such time, the Permittee shall sample and analyze the waste contained in that tank in accordance with the Attachment 2 (Waste Analysis Plan).
- IV.F.8. Waste in the BST System shall be processed either through the BRA or transferred off site to an approved facility for treatment and disposal. Processing in the BRA is contingent upon completion of testing and approval of the test results by the Executive Secretary.
- IV.G. SUMPS DESIGNATED AS 24-HOUR INTERMITTENT COLLECTION UNITS (ICUs)**
- IV.G.1. Except as allowed by Conditions IV.B.6. and IV.B.7., hazardous wastes may be stored in the sumps (ICUs) identified in Table 4 for a period not to exceed 24 hours. Except as allowed by Conditions IV.B.6. and IV.B.7., sumps shall be pumped at least once every 24 hour period if liquids are detected.
- IV.G.2. Compliance with Condition IV.G.1. shall be documented in the Operating Record by recording the time and the duration between activation and deactivation of each sump's low level indicator instrument.
- IV.H. OPERATING PROCEDURES FOR BRINE TANKS SECONDARY CONTAINMENT SUMP**

- IV.H.1. Except for the presence of liquid in the sumps allowed by Attachment 5 (Inspection Plan), if the Permittee detects liquids in the BST System sump (identified by the associated pump number, BRA-PUMP-103 or BCS-PUMP-107 in Table 4), within 24 hours, the Permittee shall manage the liquids using one of the three following methods:
- IV.H.1.a. The accumulated liquids can be transferred to a BST where the liquids shall be managed as a hazardous waste;
- IV.H.1.b. The accumulated liquids can be transferred off site where these accumulated liquids will be managed as a hazardous waste (spent scrubber brines) as specified in Section 2.2.2.13 of Attachment 2 (Waste Analysis Plan); or
- IV.H.1.c. If it can be demonstrated, in accordance with R315-2-3, that the material removed from the sump is precipitation, which does not contain listed hazardous wastes, the material may be managed as a non-hazardous waste. For the purposes of demonstrating that the material does not contain a listed waste, or is not derived from a listed waste, the analytical results obtained shall indicate that there is no detectable chlorine, the pH is neutral, the concentrations for TC metals and TC organics (identified by footnote 3 in Table 2-1 in Attachment 2) are below the corresponding detection limits, and the specific gravity is equal to $1 \pm 5\%$. If these criteria are met, the material may be managed as a non-hazardous waste.
- IV.H.2. Snow and ice shall not be allowed to accumulate or remain within the Brine Tank Secondary Containment System. Snow, ice, and liquid shall be removed within 24 hours of the end of the precipitation event. Snow and ice shall be managed as specified in Condition IV.H.1.
- IV.H.3. Sludges or solids collected in the BST System sump shall be analyzed for TCLP metals and TCLP organics. If the material from a representative sample is found to contain TCLP metals or TCLP organics above the toxicity characteristic regulatory level, the material shall be managed as a hazardous waste. If the metals or organics are all below the toxicity characteristic regulatory level, the material may be managed as a non-hazardous waste.

IV.I. INSPECTION SCHEDULES AND PROCEDURES

- IV.I.1. The Permittee shall inspect the tank and sump systems in accordance with the inspection schedule provided in Attachment 5 (Inspection Plan).
- IV.I.2. If any SDS or BRA tank has been out of service for 360 or more days, it shall be recertified by an independent, qualified registered professional engineer that the tank system is capable of storing liquid hazardous waste for the intended life of the system. The Permittee shall have this certification performed before the tank is put back into service. The certification report shall then be submitted to the Executive Secretary within 15 days after returning the tank system to service.

IV.J. RESPONSE TO LEAKS OR SPILLS

- IV.J.1. In the event of a leak or a spill from a tank system, from a secondary containment sump system, or if a system becomes unfit for continued use, the Permittee shall remove the system from service immediately and initiate the following activities:
- IV.J.1.a. Stop the flow of hazardous waste into the system and inspect the system to determine the cause of the release.
- IV.J.1.b. Contain any visible release to the environment. The Permittee shall immediately conduct a visual inspection of all releases to the environment and based on that inspection: (1) prevent further migration of the leak or spill to soils or surface water and (2) remove and properly dispose of any visible contamination of the soil or surface water.
- IV.J.1.c. Remove waste and accumulated precipitation from the system within 24 hours of the detection of the leak to prevent further release and allow inspection and repair of the system. If the Permittee finds that it will be impossible to remove the waste within this time period, the Permittee shall notify the Executive Secretary as soon as possible but not to exceed 24 hours of that determination.
- IV.J.1.d. For a release caused by a spill that has not permanently damaged the integrity of the system, the Permittee shall remove the released waste and make the necessary repairs to fully restore the tank or sump system before it is put back into service.
- IV.J.2. If the Permittee replaces a component of the tank system to eliminate a leak, the replacement component shall satisfy the requirements for new tank systems or components in R315-8-10 [40 CFR Sections 264.192 and 264.193 incorporated by reference].
- IV.J.3. After all major tank or sump system repairs, the Permittee shall obtain a certification by an independent, qualified registered professional engineer that the repaired system is capable of handling hazardous wastes without release for the intended life of the system before returning the system to service. Examples of major repairs are: installation of an internal liner, repair of a ruptured tank, or repair or replacement of a secondary containment vault.

IV.K. CALIBRATION REQUIREMENTS

- IV.K.1. The Permittee shall maintain, calibrate, and operate all process monitoring, control, and recording equipment as specified in Attachment 6 (Calibration Plan), whenever hazardous wastes are present in a permitted tank system.

IV.L. RECORD KEEPING AND REPORTING

- IV.L.1. Except as allowed in Condition IV.L.2., the Permittee shall orally report to the Executive Secretary within 24 hours of detection when a leak or spill occurs from a tank system or secondary containment system.
- IV.L.2. Releases from a tank system that are contained within a secondary containment system need not be reported unless they occur from an unexplained source. All pertinent information about a release shall be recorded in the facility Operating Record.

- IV.L.3. Within 30 calendar days of detecting a release to the environment from a tank system or a secondary containment system, except for P999 and F999 wastes which require a written report as specified by Condition I.U., the Permittee shall report the following information to the Executive Secretary:
- IV.L.3.a. Likely route of migration of the release;
- IV.L.3.b. Characteristics of the surrounding soil (including soil composition, geology, hydro geology, and climate) including proximity of down gradient drinking water, surface water, and populated areas;
- IV.L.3.c. Results of any monitoring or sampling conducted in connection with the release. If the Permittee finds it will be impossible to meet the written report time period, the Permittee shall provide the Executive Secretary with a schedule of when the results will be available. This schedule shall be provided in writing before the required submittal period expires;
- IV.L.3.d. Description of response actions taken or planned to minimize the spill impact on the environment;
- IV.L.3.e. Describe the repairs, design changes, or operating procedures to the tank system to minimize the potential for additional spills or leaks.
- IV.L.4. The Permittee shall keep on file at the facility the written certification statements by those persons that certify the design, installation, and integrity of the tank systems until such time that those tank systems are certified closed.
- IV.L.5. In the event that a tank exceeds the maximum allowable capacity designated for that system, the Permittee shall notify the Executive Secretary in writing within seven days of discovery and document the following information in the facility Operating Record:
- IV.L.5.a. The date and time of occurrence;
- IV.L.5.b. The tank system involved and its contents at the time of the occurrence;
- IV.L.5.c. Any other available tank storage volume within the system. If no additional storage capacity was available within the storage system, indicate if the associated collection and treatment activities were automatically stopped;
- IV.L.5.d. A description of whether the tank system automatically switched from the High-High level tank to a tank with the available storage capacity and if the tank intake valves were automatically closed;
- IV.L.5.e. Any associated incinerator automatic waste feed cutoff interlocks. Identify the interlocks and whether the interlocks were successfully activated; and
- IV.L.5.f. A description of the operating control procedures that allowed the tank system to exceed the maximum allowable storage capacity (e.g., why the operator was not successful in managing the waste within the high level volume working capacity).

IV.L.6. The Permittee shall document and record the results of each SDS tank waste analysis and any subsequent treatment.

IV.L.7. The Permittee shall document and record the results of each BST waste analysis and any subsequent treatment.

IV.M. CLOSURE

IV.M.1. Partial Closure

IV.M.1.a. At the conclusion of each agent campaign, the TOX shall be thoroughly decontaminated; all decontamination films shall be removed using an appropriate rinse; all clouded observation windows that compromise the ability to view operations shall be cleaned or replaced; and maintenance and repair shall be performed. The Permittee will submit in writing to the Executive Secretary, a request for partial closure of the room and tank systems, since the agent is being changed. Upon approval for partial closure by the Executive Secretary, the next campaign will commence, when authorized, and when it is appropriate to do so.

IV.M.2. The Permittee shall close the Tank Systems in accordance with Attachment 10 (Closure Plan).